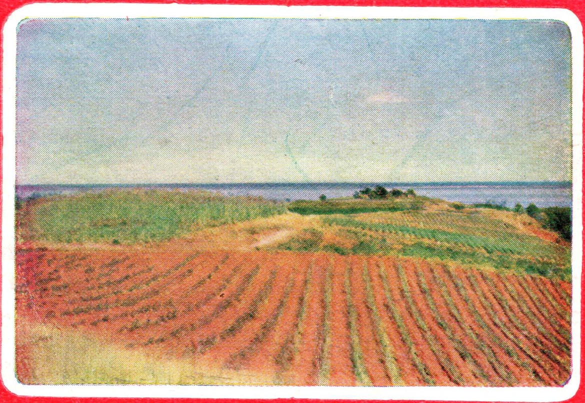
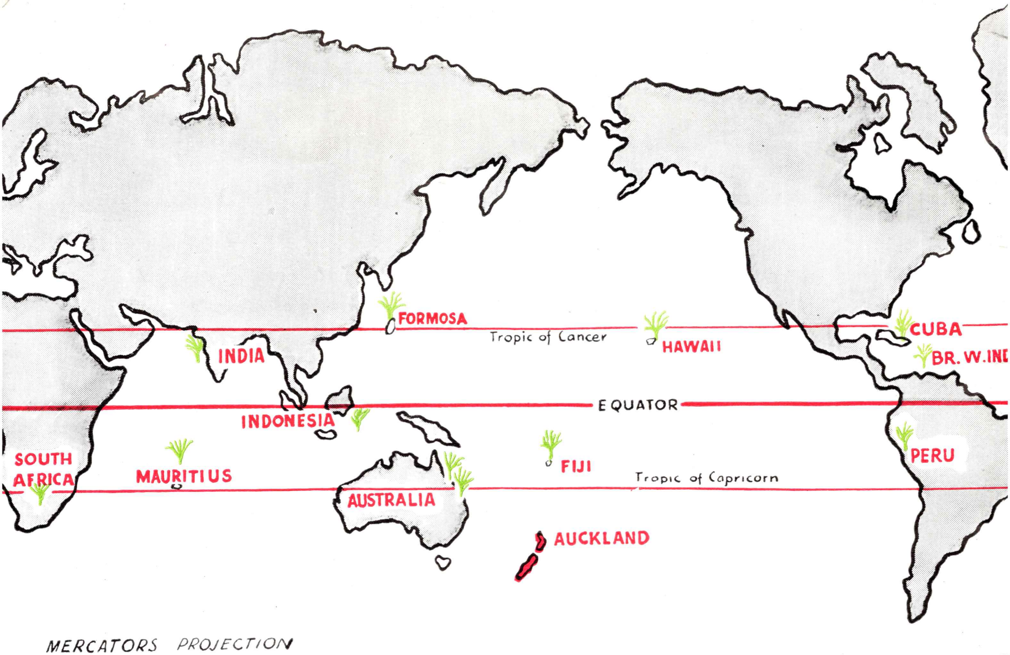
Much of New Zealand's sugar is made from cane grown in Fiji. The farmers are cultivating their crop. Young cane in the foreground.

NEW ZEALAND SUGAR 1955

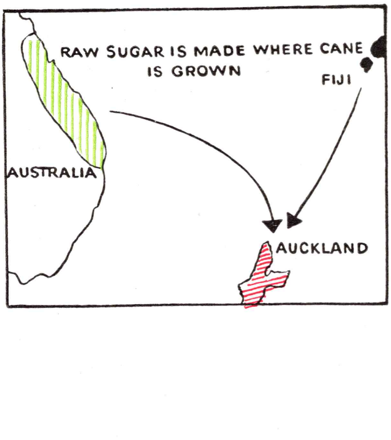


A sugar cane farm in Fiji. Farmer's home in middle distance and road in foreground. Most of the cane in Fiji is grown by Indian farmers on small farms.

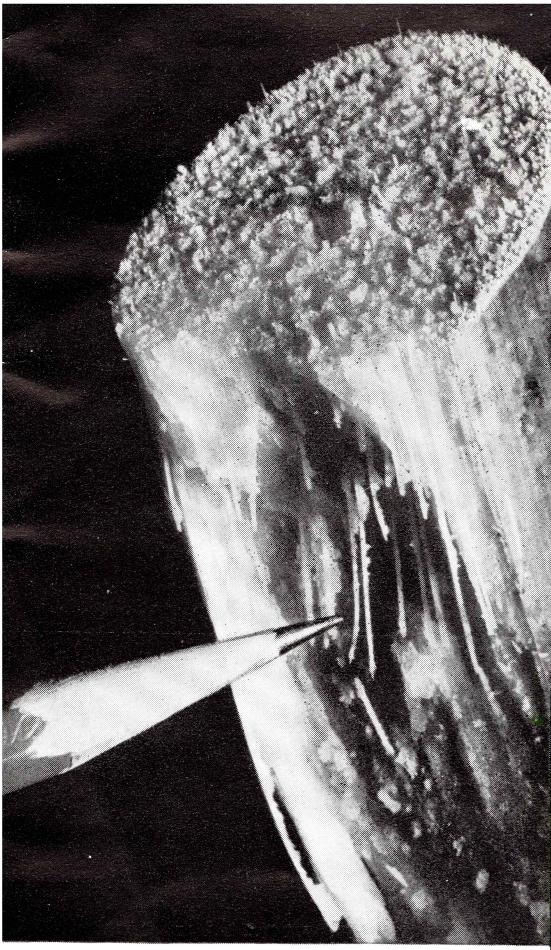


Sugar cane grows in the tropics

Sugar cane thrives in the hot, moist climate of the tropics. New Zealand is too cold for successful canegrowing. Fiji and Australia are the nearest canegrowing areas. They supply most of our raw sugar. Peru, Cuba, Formosa and the British West Indies have also sent us some raw sugar.

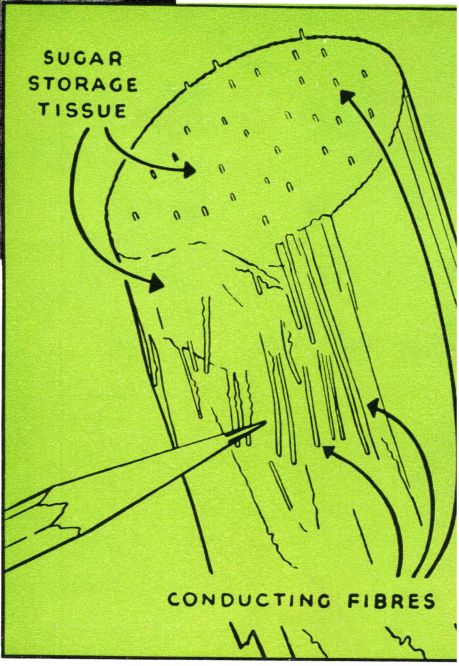


The main requirements to grow cane are rich soil, high temperatures and high rainfall. The map above shows that most of the world's sugar cane grows between the Tropics of Cancer and Capricorn.



How Sugar is made

Sugar is made by the action of sunlight on the green leaves of the cane plant. Carbon dioxide gas in the air combines with water to form sugar.



How cane stores Sugar

Cane stalks look rather like bamboo, but they are not hollow. They are heavy and filled with sugar juice.

This piece of cane above has been cut to show the long, hard conducting fibres and the soft storage tissue. The pencil is pointing to several fibres which have been broken off by gouging a piece out of the side of the cane. Inside each long, thin conducting fibre are two tubes. One tube takes water from the soil to the leaves of the cane plant and the other tube brings sugar juice from the leaves where the sugar is made to the soft tissue in the stem where it is stored.

Indian cane cutters harvesting ripe cane in Fiji. They are slashing the cane off at the base with sharp knives.

IN FIJI

10,000 farmers grow cane

The average size of a cane farm in Fiji is ten to twelve acres. These farms are worked by Indian or Fijian tenant farmers. In most other countries cane is grown on big plantations.

The C.S.R. Co. introduced tenant farming methods to Fiji as early as 1916, when it broke up its plantations into small farms. The Indians and Fijians often had little capital, so the Company lent them the money to live and to buy implements.

This system of canegrowing has proved very successful. The farmers have an interest in their land, which gives them a greater incentive than plantation workers have. C.S.R. field officers help them with technical advice, and they are given specially-bred high-yielding canes free by the Company.

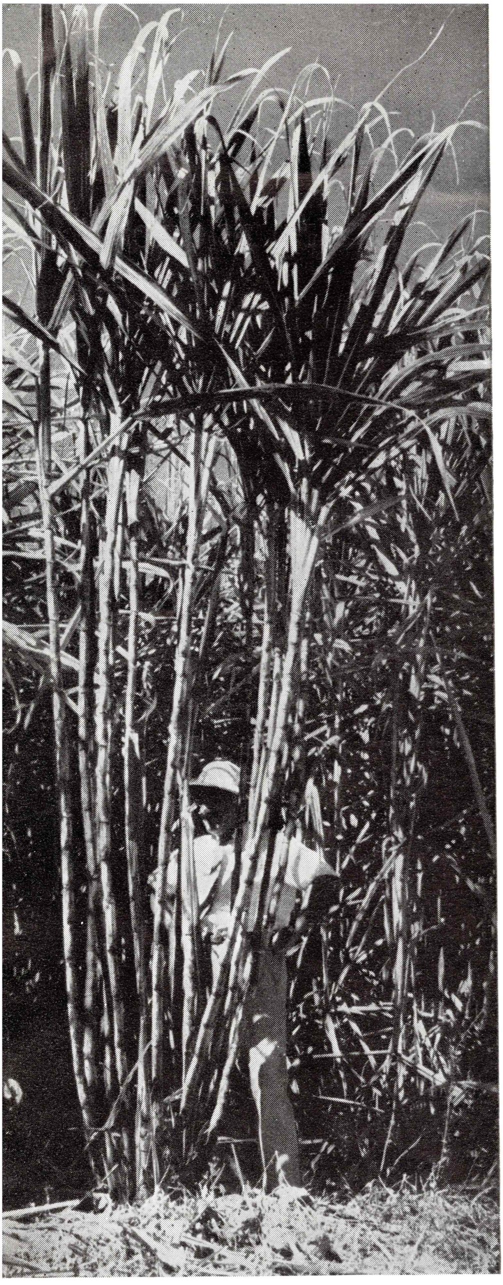
ON THEIR OWN FARMS

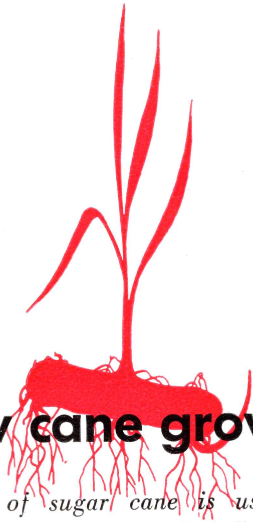
9,000 independent farmers grow Australia's cane

Australia's cane is grown on small farms by 9,000 independent white farmers. The average size of an Australian cane farm is only about 50 acres, but farmers get good yields by growing sugar-rich canes and using good farming methods.

The Australian system of small farm cultivation of sugar cane is unique in the world. Farmers use modern agricultural implements to cultivate their crops and to keep down weeds, which grow rapidly in the tropics. An Australian farmer with his tractor and implements can cultivate about 10 acres a day on his own, at a cost of only a few shillings per acre. The same work would cost several pounds per acre using hand-cultivation methods.

A typical Australian soldier-settler cane farmer. He and his wife both work hard on his small farm, but they lead happy healthy lives.





How cane grows

A crop of sugar cane is usually grown from cuttings called "setts". In Australia and Fiji a planting machine cuts up cane stalks into 18-inch lengths, drops them lengthwise into furrows with a small amount of fertilizer, and covers each furrow with earth as it goes along. In some other countries, slow and laborious hand-planting methods are still used.

The buds, or "nodes" on each planted sett of cane send out shoots and a clump of stalks like the one on the left grows up. The roots of the plant also grow from these nodes. (See above illustration.)

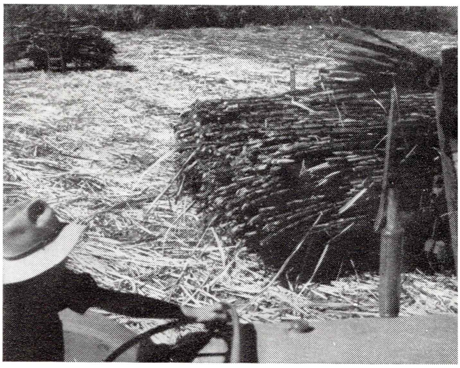
Each clump of stalks is called a "stool" of cane. Some varieties grow to fifteen feet in height. The cane illustrated on the left is "Pindar", a specially-bred variety, growing in North Queensland, Australia. It is fifteen months old, and is ready for harvesting. The first crop is cut and the setts are left in the ground. From them a second or "ratoon" crop will grow up.

Cane is cut . . .

When the cane is ripe for harvesting it is burnt to clear dead leaves and undergrowth. Cane-cutters slash the stalks off at ground level with big sharp knives.

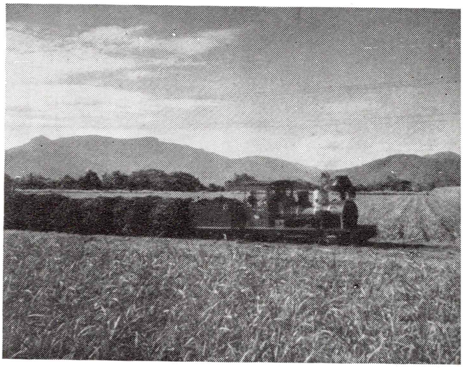
loaded on trucks

The tops of the cane are trimmed off and the stalks are loaded on trucks. The cane is not hollow, like bamboo, but is heavy and full of sweet sugary juice.



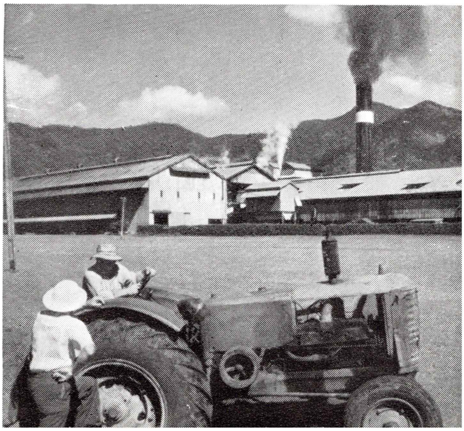
hauled by loco . .

Empty trucks are delivered right into the fields on short lengths of portable railway line. When these trucks have been loaded by the cutters they are taken back to the main line.



to the nearby mill

Mill locomotives collect each "rake" of trucks and haul them to the mill. This is the main method of transport in both Australia and Fiji, although barges pulled by launches are also used in some areas.



New canes are developed by cross-breeding. For instance, a cane with juice rich in sugar may be crossed with a hardy cane which gives a big tonnage of cane per year. The scientist on the left is cross-fertilising cane flowers, while an assistant is potting seedlings.

Farmers grow sugar-rich canes

Farmers in Australia and Fiji grow specially-bred canes, developed to give high yields of sugar per acre and to resist disease. Cane breeding is a specialist's job. Sometimes as many as 10,000 seedlings are grown and tested before a successful new variety is found.

The C.S.R. Co. helps farmers by breeding new canes and giving them free to growers. In Australia this breeding work is also carried out by the Queensland Government.

New canes have helped to improve sugar production and have contributed largely to the efficiency of the Australian and Fijian sugar industries.

Raw sugar is made at factories in the canelands

Cane rapidly loses its high sugar content after it has been cut. That is why it is carried immediately to large factories situated right in the canelands and crushed to remove the sweet juice.

These raw sugar mills are equipped with much costly machinery. One mill may cost as much as £4,000,000.

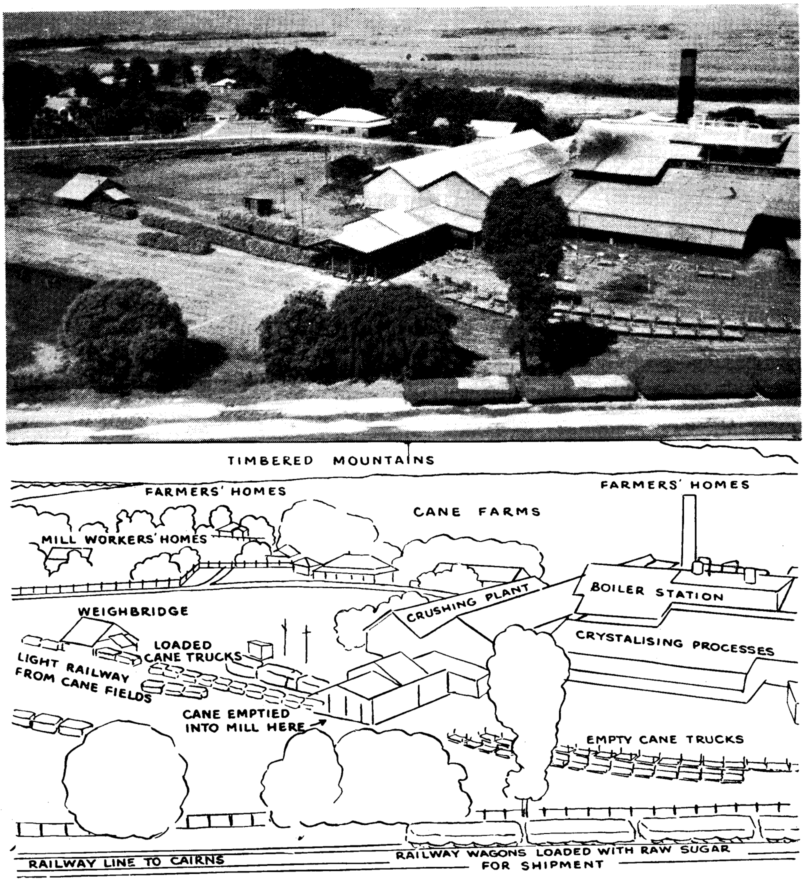
There are 34 mills in Australia (7 owned by C.S.R.) and 5 mills in Fiji.

When the sweet juice has been crushed from the cane, lime is added to precipitate impurities; it is filtered, concentrated by evaporation and boiled under vacuum until crystals form.

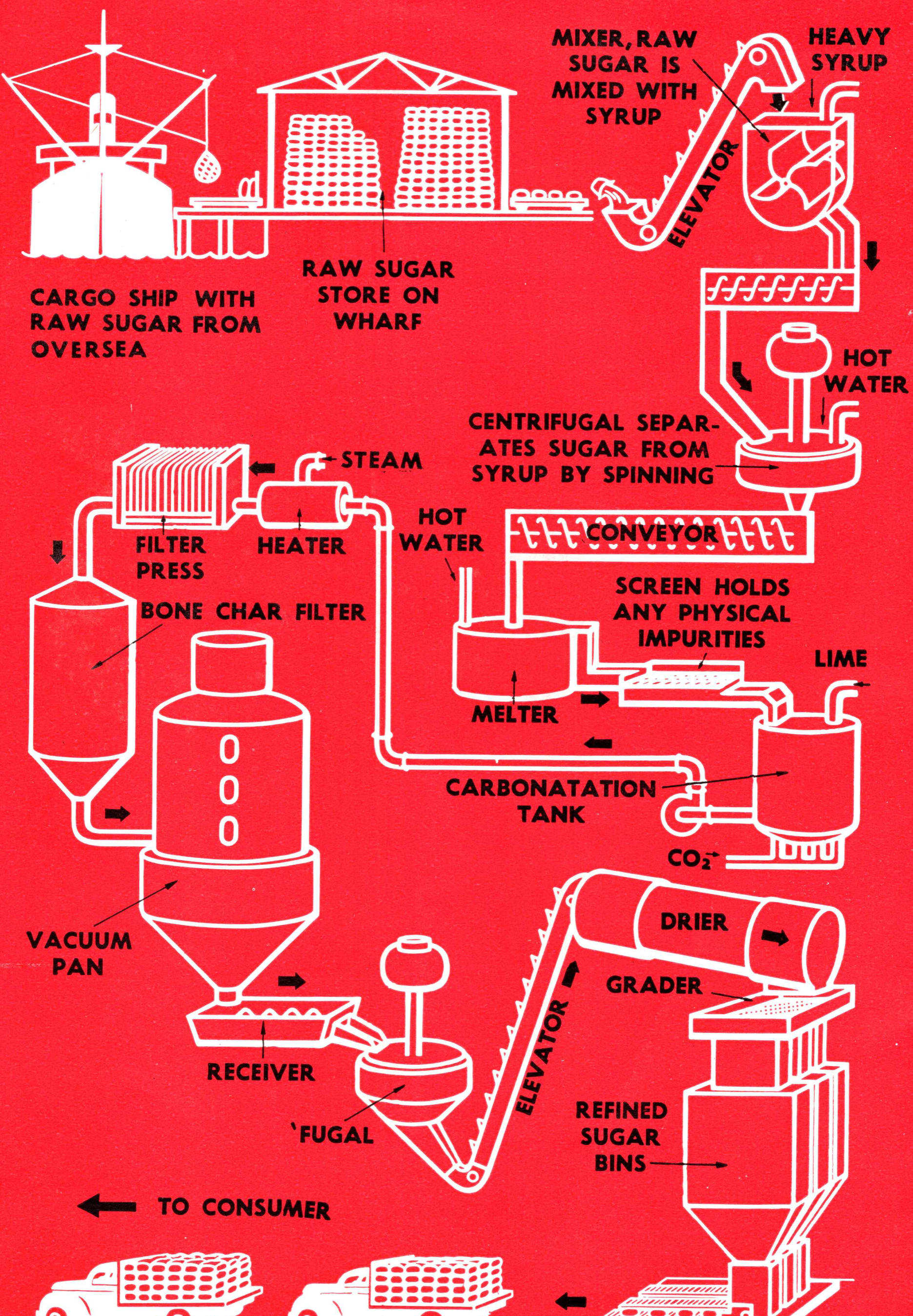
The crystals are removed from the syrup, dried, bagged and shipped to refineries. Raw sugar is a crude intermediate product and is not meant for eating.

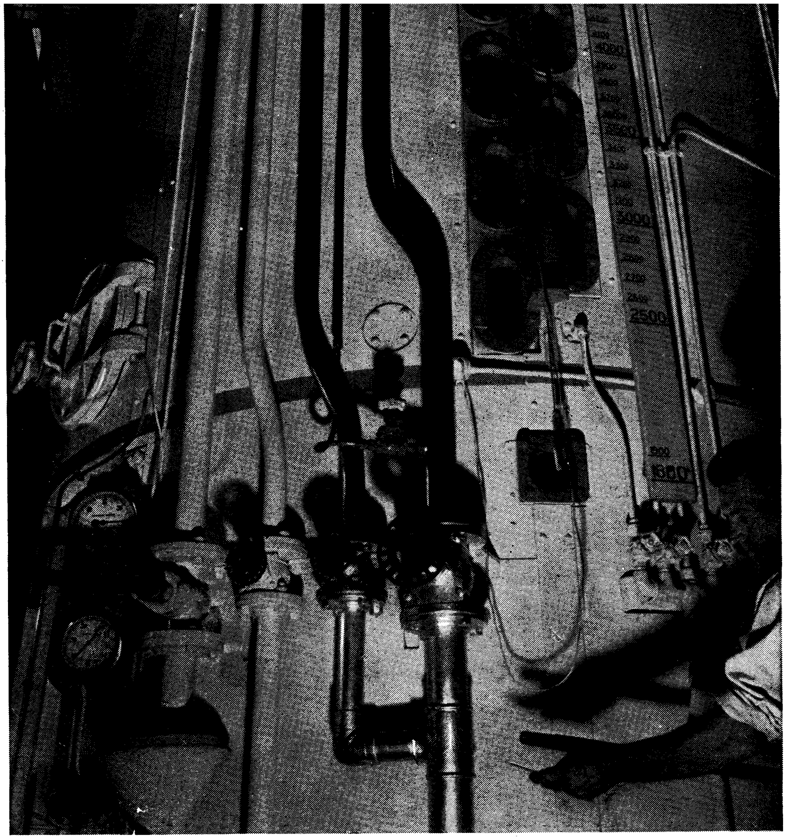
The cane fibres left after crushing are used as fuel for the mill boilers or made into a type of insulating building board.

An Australian raw sugar mill. The key diagram shows the various sections of the mill, and details of the surrounding countryside.



how sugar is refined



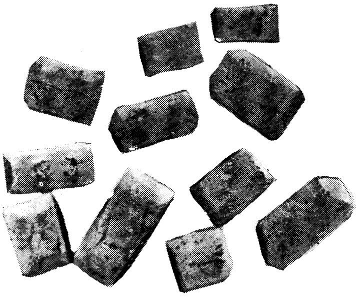


Vacuum pans like this are used at Chelsea Refinery, Auckland.

Sugar is refined near the main bulk of the customers. New Zealand's sugar is made at Chelsea Refinery, Auckland. Chelsea is built on the coast to simplify delivery of the raw sugar, which comes by ship. Large overseas vessels discharge at the refinery wharf.

At the refinery the raw sugar passes through many complex processes before it becomes the familiar white crystals you buy at the grocer.

Sugar crystals which form in a vacuum pan. They are magnified many times. All crystals of refined sugar are the same shape.



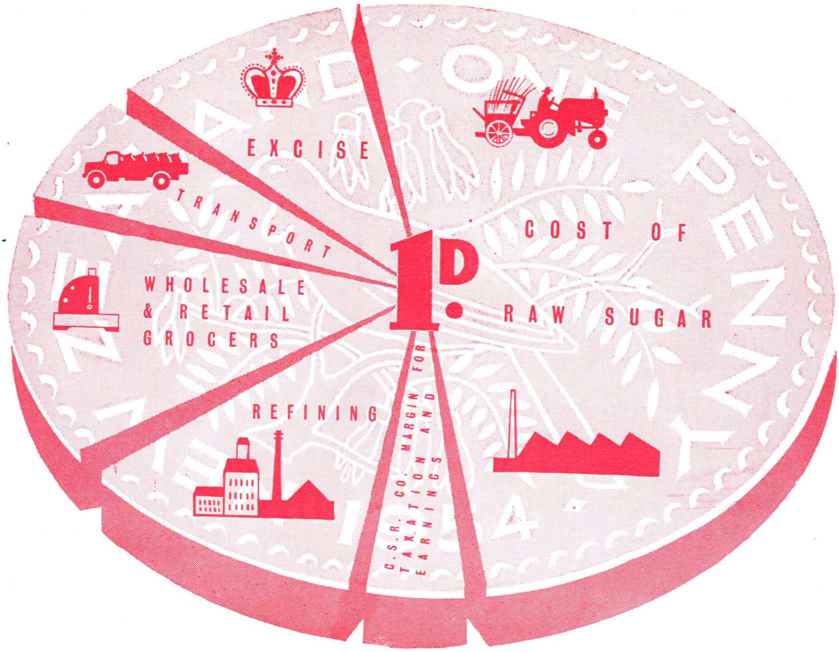
Children have a natural love for sweet foods, which provide a ready source of energy. Sugar and foods rich in sugar give energy and play an important part in a balanced diet.

A balanced diet for good health

A good all-round diet should include body building foods like eggs, meat, fish, cheese and milk, vitamin and mineral-rich foods like fruit and vegetables; some fats; and energy foods like bread, cereals and sugar. General good health and a good all-round diet are important also in maintaining healthy teeth and bones.

Mountaineers often suck boiled lollies to give them extra energy, and athletes chew lumps of sugar to help them in a hard contest.

How every penny you spend on Sugar is divided



Just over half of every penny you spend on refined sugar goes to the farmers who grow the cane and the millers who make the raw sugar. About one-third is used as payment for the transport of the raw sugar, and to meet the costs of refining and distribution. The C.S.R. Company receives about one twenty-fourth of every penny to meet payments to the Government as taxation, and to pay the shareholders who own the Company for the use of their savings.

The Government also receives a portion of each penny as excise duty. The total amount of excise each year amounts to about £¾ million. This is a contrast with other basic foodstuffs such as bread, milk, butter, flour and eggs, which are all subsidised by the Government. In other words, the Government makes payments to producers to help keep the price down.

The C.S.R. Company . . .

The Colonial Sugar Refining Co. Ltd., occupies an important place in Australian and New Zealand industry; it is one of the largest companies in the Southern Hemisphere. It is interesting to note that although it has large interests in Australia 20 per cent of its shareholders live in New Zealand.

In addition to its New Zealand sugar business the Company owns:

7 of the 34 Australian sugar mills.
5 of the 6 Australian sugar refineries.
3 ocean-going steamers.

In Fiji it owns:

5 raw sugar mills.
A pineapple plantation and cannery.

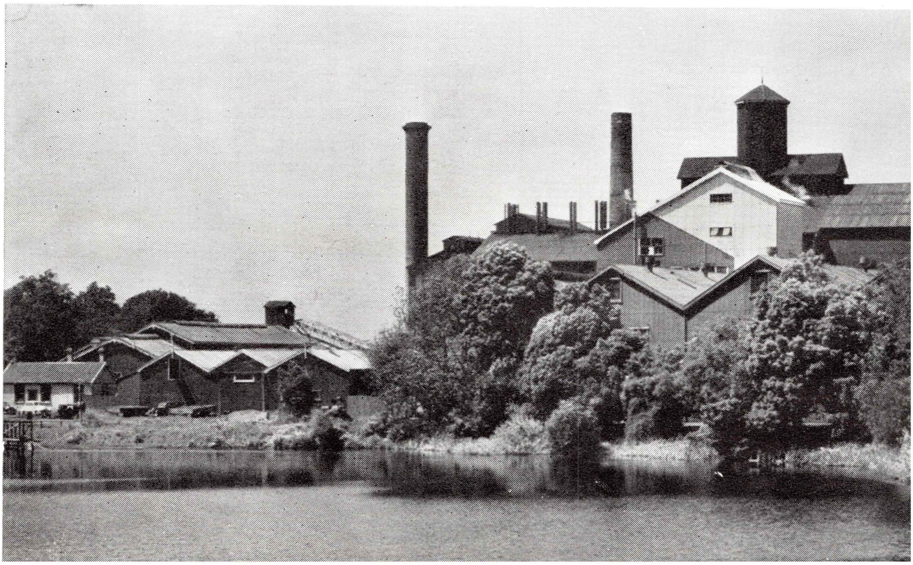
Besides sugar, the C.S.R. makes:

Medical alcohol, rum and methylated spirits from molasses at its distilleries in Sydney and Melbourne.
Various industrial and pharmaceutical chemicals.
"Cane-ite" and other building materials.

It works:

Asbestos and gypsum mines.

The C.S.R. Company's Chelsea refinery at Auckland. New Zealand's sugar is refined at Chelsea.



Look at your grocer's shelves next time you go into his shop. Many of the good wholesome foods he sells are rich in energy-giving sugar.

Many wholesome foods contain sugar . . .

Your grocer sells C.S.R. loaf sugar and Golden Syrup in their new packages. He also sells many other sugar products such as treacle, brown sugar, icing sugar, caster sugar and pure refined 1A sugar. But he also sells sugar in many other foods. Jam, for example, is 60 per cent sugar and condensed milk is 55 per cent sugar. Biscuits, canned fruit, cordials, chocolate, confectionery, ice cream, cakes, jellies and preserves are also rich in energy-giving sugar.

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